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ABSTRACT

Health care is a social as well as a scientific process, and changes in health care delivery necessitate changes in preparation. Four types of changes, with their implications, are: graph or curve-extension change (past history and present observable fact--health manpower has become the greatest growth area in modern American employment); scientific and technical change (the effects of innovation); delivery system change (consequent shifts in proportions of people working in different areas); and quality control change (credentialling, licensure, and other reforms). The evolution of two systems, well-care and sick-care, will result in the need for workers in the preventive aspects of health, including dietitians, records workers, health sociologists, diagnostic workers, expanded-role nurses, and health educators. Educational planners may be interested in the predictions that the use of institutional licensure will soon be widespread, based on task performance, and that changes in delivery and quality control will require a team approach of both educators and practitioners. (AJ)

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FUTURISM AND HEALTH OCCUPATIONS EDUCATION: The Implications of Changes in the Delivery System.

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Health Occupations Section
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Planners must be multipodal. We keep our feet in many camps, a difficult and sometimes dangerous practice. No one who stands spread out can avoid a certain visceral vulnerability as he tries to cover all the ground. We live in a time of informational excess. However, at least we never get so isolated that we think we know everything. We borrow from many sources.

This discussion is the result of such borrowings, from a lot of my professional neighbors in the many worlds I work in; an attempt to give you a picture of health manpower needs that will be fairly clear in some instances and pretty darn hazy in others.

In our investigation of change and its implications to educators, I'll discuss four areas, ranging from the fairly concrete and predictable to the somewhat abstract and speculative. These are:

1) Graph or Curve-Extension Change: past history and present observable fact.

2) Scientific and Technical Change: the effects of innovation, usually a very difficult area for prediction, except we do know that scientific and technical change is going to happen. There are some indicators.

3) Delivery System Change: consequent shifts in proportions of people working in different areas, and, finally,

4) Quality Control Change: credentialling, licensure and other reforms, which may produce a whole new ball game in education.

I. Graph or Curve-Extension Change

We have seen health manpower become the greatest growth area, in terms of numbers and needs for trained people, in modern American employment. In 1900 there was 1 person working in health for every physician, by 1940 there were five and in 1950 there were eight. In 1960 we reached 11 to 1, today it's something like 15 to 1, and we'll reach nearly 20 to 1 by 1980, even with 400,000 doctors.

In any decade you can name since 1940, actually any 10-year span, employment in health rose by 50%. There is just no reason to suppose this is going to stop. We have something around 4.5 to 5 million people working in the health service industry (extended) today, and the best manpower economist I know in this area, Harry Greenfield, predicts we'll need 7 million by 1980. 1/ Temporary setbacks in care and payment are probably not going to interfere very much with growth over the long pull. Lack of production in education occasioned by the present budget setbacks probably won't either. It may, in fact, occasion even greater manpower use as fully developed professionals in short supply have historically

been substituted for by more narrowly trained persons, but more of them. The demand for service always produces a response if there is money to pay for it, and we are not, as discussed below, likely to lack for money.

Growth Factors:

The growth factors that produced present employment are pretty good evidences of continuance. Population growth, of course, but it's more than that. In addition to population growth, it's a combination of hope, affluence and super-annuation. First, hope, because technical and scientific progress give people the ability to get a good deal more out of the health service industry. The same 1000 people want and use a lot more health care today than they did in 1963. (The only problem is that they still want the bill to be the same.) We will get growth to give larger amounts of health care to each individual.

Secondly, affluence. We do have the money to pay for a health care system and we're likely to have a lot more. National health insurance will come sooner or later in this decade. When that happens and we make health care available to the 5 to 30 million people* who probably do not get adequate service today, it's going to make the boom in manpower which Medicare brought about look like a very minor crisis indeed. Health care is a right; eventually we are going to see that that right is paid for, and it's going to have some real consequences in manpower.

Finally, super-annuation. We are -- in contrast to popular supposition-- an aging nation. Our average age reached its low point of near twenty seven a couple of years ago, and is starting to climb. Look at births and birthrate over the last couple of years. We'll be luck to hit 3,000,000 this year, contrasted with 4,300,000 plus in the peak year of 1959. We are going to have ever increasing percentages and numbers of older people for a long time, and older people, like older machinery, take a lot of tinkering to keep going. The health service industry is, in fact, largely a chronic care system today -- although the myths of the past and the imaginations of its PR men keep us thinking of it as dramatic and acute.

With these factors of population, increased usage, dollars, and aging continuing, we will have continued need for expanded education of both conventional and new types of health personnel, regardless of the system.

* depending upon whether you are with AMA, Senator Kennedy, or somewhere in between.

It's important to note that with this growth going on in the conventional system that there is still a shift in emphasis, even with the system as we now find it. There is a strong push toward ambulatory care, which has resulted in reduced censuses of bed patients. This is illustrated by the growth of such things as surgi-centers, one-day places where people have minor and sometimes not so minor surgery on an out-patient basis.

In terms of people and specifics, some of the growth factors and changes within the present system which are going to produce greater needs for certain kinds of workers, and changes in educational preparation, include:

1) Continuing need, and ongoing upwards, for rehab workers of all kinds: Occupational Therapists, Physical Therapists, Rehabilitation RNs, Social Workers, Rehabilitation Counselors, Mental Health People. Health in the disadvantaged community is as much rehabilitation as prevention and cure.

2) Diminishing need for acute care kinds of people; or at least. because people always will get sick or hurt, this is more likely to hold its own and not be an area of major growth. This has some very strong implications, as you'll see when we get to area three, Delivery System Changes, for what we may be doing in nursing and other kinds of education for bed-care patients. It's obviously implied that we have to shift the emphasis there to prepare people to work in other roles far more than we do now.

There's going to be a need, especially if we have National health insurance, and pull a lot of people into the system, for outreach workers, patient advocates, for people to manage people through an illness or other episode, or even through a health system. There's potential use for nurses, for example, who have historically been related closest to the patient in terms of the totality of his illness experience. But we probably will also train other kinds of people to carry out the function of guiding people, relating to them, in this very complex and dehumanizing system of ours.

3) Lots more diagnostic workers. Again, if we dump a lot of people into the system who have not here-to-fore had good health care, only showing up when they were so sick they were not able to work, we're going to do a lot more diagnosis. The proportional mix of specialities may change here, and I'll touch on this in Point 2, the Technological Change area, but essentially, we're going to need a lot more training for the diagnostic area.

4) Continued growth in medical records and for records personnel; administrators and clerks and all the other people in that hierarchy, which probably has the best career ladder in the industry.

5) Much more sophisticated administration, and workers at the foreman and unit manager level as well as at the overall level. We are having, regardless of any change in the system, increasing governmental and private emphasis on cost control and quality control, better management generally, and this takes administrative people. We are either going to train people who are now technologists to handle these kinds of functions or bring in managers -- probably some of each. One of the problems of the industry of course is so often we train people for the wrong job. We train medical technologists to do tests, instead of to teach others and run the department, which will be their real jobs in many cases.

6) New primary care workers. As we continue to center help within ever-larger centers, as the doctors leave the villages in tears, we're going to have to do something about those villages and staff outreach clinics with new kinds of outreach workers, backed up by sophisticated communications equipment-- telephone, television, etc. -- to keep in contact. (This sort of thing is going on now in a number of experimental situations. If you'd like a readable prediction of the future of some of this, read Michael Crichton's book Five Patients (author of the Andromeda Strain).

7) Increase in the number of environmental health workers, doubling them in this decade. But, in the most recent publication on environmental health of the government I read, about two inches thick, there is exactly 1 1/2 pages devoted to the manpower implications of this, and the only concrete figure in there is for waste-water technicians. So draw your own conclusions as to where the environmental workers are going to be hired, who's going to hire them. This should shake out, but if you're going to get in this educational area, do an awful lot of looking into where your people are going to be hired. The need is unquestioned, but where and how and who is another matter indeed!

II. Scientific and Technical Change

The effects of innovation are extremely difficult to measure. Sometimes we fall back on the growth factors I discussed in point 1, because the historic carrying forward of the gross curve will often make you right regardless of your reasons. The people who predicted in the early or mid-1950's the need for Physical Therapists in 1965 were right, but their prediction was based on polio, which was taken care of in the late 1950's with Salk and Sabin. Yet if we hadn't prepared to produce PTs (and God knows we haven't produced enough of them) on the scale predicted in the early 1950's, we would have been really left out when all of the areas of rehab, geriatrics, etc. that these people now work in began to absorb their energies and their skills. So the prognosticators were made to look good, even

if their predictions were right for the wrong reasons.

We're going to see new professions that you and I have never heard of come about because of things that happen elsewhere. Inhalation Therapy is the best historic example I know. It was purely a result of positive pressure breathing apparatus produced in other areas for other purposes (high altitude and undersea work), having potential application in the treatment of our modern disease of emphysema, as well as other things.

Now what new is going to happen, except that it's going to happen, is a real good question. In Vietnam, despite all of our sorrows, we have developed some very sophisticated detecting equipment, sensors, the automated battlefield. I would be very surprised if some of this were not adapted to the health field in some meaningful way. With our American emphasis on personal daintiness, it might be a little indelicate to indicate, but they now have sensors which can apparently detect the odor of a human being hidden in the brush hundreds of yards away. Well, when you get that kind of sensitivity, it might just potentially have some implications in diagnosis. Reports may be exaggerated, I really don't know, but lots of progress has come through this kind of hitchhiking on tangential technology. So we have to be ready for change, certainly keep our education geared to producing people ready to absorb change -- not educated for yesterday's jobs as they emerge from the program.

In terms of predictable technological change, or reasonably-predictable technological change, we are going to continue to automate the medical laboratory, and most workers in that framework are going to require more training. Yet we're probably not going to need less workers. I learned recently that the exponential curve of need for medical technology people in the laboratory did not change, except to steepen slightly, from 1930 thru 1970. 2/ Automation came in in the '60's, but it has not diminished our need for workers. It has diminished our need for relatively untrained workers, as the rise of the Medical Laboratory Technician programs at the Associate Degree level indicate.

In Radiologic Technology, certainly we're going to have more proliferation in more fields as we go further and further into the possibilities of radiant energy, of ultra-sonics, thermography, the whole world of the atom, and its use in medicine. Who knows what health applications may come out of that spooky concrete circle the Atomic Energy Commission is building west of Chicago.

We're certainly going to have computer-assisted diagnosis--we've got it already -- and this is going to be broadened and a lot more people are going to be using it. High school people using computer-assisted diagnosis, helping the patient take his own history, get much better histories than interns and residents do; for one reason because the machine doesn't forget or get distracted. We're going to use more of this, and we're going to have to train people to do it.

With this increasingly complicated equipment, in the final area of predictable technical change, we will need more biomedical technicians and engineers, to keep up with technical change and maintenance. That you can count on. Just exactly what specifics are something else, but you're supposed to educate, not just train someone to do one thing.

III. Delivery System Change

We're going to have many more health maintenance organizations, medical foundations and so on--what a friend of mine calls "articulated health care delivery systems"....taking a defined population, getting a defined income from it on a per capital basis, and trying to keep those people well. The emphasis changes here, to keeping people well, and the manpower implications of that are many, since your profit comes from keeping people out of the expensive acute care side.

It is thepolicy of the Nixon administration to move in this direction. Even though, perhaps predictably, the administration did not put its money where its promises were, over 100 new HMOs came into being in the last two years largely without government help, an idea whose time has come. Now Congress has agreed upon a 375 million dollar, five-year effort, so this is coming.

The initial costs are enormous and the needs for people are large. You must immediately look at a total population, all the people in it, and see what you can do to keep them well. So we're going to have a shift in proportions of workers and new kinds of workers growing in this decade. The philosophic change means a lot.

To illustrate the change I might point out that we do a great deal in renal dialysis and we train workers to run kidney machines, spending millions to keep people alive in the final stages of kidney failure. But I am not aware of a single program for training people to counsel people with hyper-tension, or detect incipient kidney disease, to help them with exercise, diet, therapy, drugs, etc., to keep them from advancing to the stage where the kidney fails. This, if we put money into it, would be far more conservative of human resources. Hopefully, the rise of the health maintenance organizations will turn us toward that sort of an emphasis, and possibly toward educating that sort of worker.

We'll have, in all probability, two systems: a well-care system and a sick-care system. The sick-care system will be fairly conventional, in terms of its manpower needs--it's the system we now have. If you prefer Anne Somers, it's the "non-system" we now have. As a somewhat eclectic, but nonetheless dedicated, sociologist I have to believe there's one there somewhere.

Well-care will be quite different. It will be staffed, in the predictions I have from many people, to a great extent by allied health and nursing workers, with the M.D. standing at the cross-over point to the sick care system. (Lovers of plain talk will notice I have studiously avoided the fashionable "interface" when I mean area of overlap, line of contact, or even "no man's land.")

Implications of this shift in philosophy in terms of people? Generally, the health occupations education system will tend toward less of present built-in bias toward service in the acute-care system. As observed, we don't have a health system today, we have an illness system.

Specifically, needs for more workers in the preventive or "keep well" aspects of health:

> Dietitians and assistants to help people with nutrition. It's very easy to eat well on a welfare income, if you have a masters in nutrition. Unfortunately most welfare mothers don't have that; but hopefully we'll get to the point where 50% of the acute care problems in ghetto hospitals won't have poor nutrition as their base. We'll be counseling others, because obesity is one of the worst diseases we have.
>
> Medical Records again. If you're going to take whole populations and put them on records, our present need for more medical records workers will grow even more acute.
>
> We'll need health sociologists, people who can relate to this system and understand it, and carry people through it.
>
> We'll need many more diagnostic workers, especially initially, and the start-up costs here are staggering.

The idea that this will cost less is nonsense. Maybe in the long pull, in terms of human productivity and other things, sometime in the 21st century, these things will pay off, but initially if we're going to take large segments of the population and find out what is wrong with them, or what may be going wrong with them, it's going to cost a lot of money. So we're going to need diagnostic workers.

> We're certainly going to need physician's assistants and expanded-role nurses, as I indicated, especially in the well-care aspects.
>
> Certainly Physical Therapists and assistants, with perhaps a difference. People in well care will be interested in keeping people in good physical condition.

Patient advocates I mentioned previously. Certainly if you're going to have whole families enrolled, they are going to have to be counseled in how to make the best of what's available.

Finally, because the ultimate health worker is the patient himself, 3/ we're going to need a lot more health educators in the broad sense--people who can tell people how to take better care of themselves, and hopefully, motivate them to do that!

Perhaps we can do for people what the veterinarians long ago did for our farm animals. Strangely enough, through preventive measures, veterinarians aren't horse doctors today. Only 1 out of 20 specializes in large animal practice. Where have they gone? Well, many joined the urban revolution, working in the environs of large cities on small animals, because from a preventive medicine standpoint, people don't take much better care of their pets than they do of their children, a little bit better maybe, but not much.

IV. Quality Control Change

To a large extent, at least in the rubric of the health field, quality is controlled by credentialling, licensure, educational accreditation of the program producing people. There is increasing questioning of the effectiveness of personnel credentialling as the best safeguard of good patient care. There is, also, general dissatisfaction with a terrible disease of our country, "Infectious Credentialitis", as Light calls it. Cures include open universities, "credit for what you know", etc., and I think this is going to have a profound effect on the health fields from the education side. 4/

Hospitals and other health care corporations have a corporate responsibility for good care, and the fact that this is delivered by someone with a credential doesn't obviate that responsibility. (Supreme Court of Illinois, 1965, and 50 court decisions since. Darling vs Charleston Hospital.) Hospitals practice medicine and therefore are responsible. Well then, why doesn't the hospital then have the responsibility, period, to decide who's qualified and who isn't?

We've had the proliferation of epi-epi cycles of specialization -- each new group forming a national association, pushing for licensure, certification, and so on. It can't go on much longer. Many people are fed "to here" with it, the general public and others. Great agencies have called for moratoriums on licensure -- the American Hospital Association, the American Medical Association, and most recently the federal government.

In Secretary Richardson's Report on Licensure and Related Health Personnel Credentialling there are a number of things called for. I might refer you to Chapter 11 particularly, as it has some implications for all of us.

One of these is experiments in institutional licensure as our means of quality control -- define the goals, jobs, scientific work; test the product rather than the people doing the job. By way of illustration we already do this in pharmaceuticals. A high school dropout can compound a prescription at a drug company. If we can control the product, define quality patient care -- and there are some that think that medico-socio-metric task can't be done, but there are others who think it can be, and are doing it, experimentally at least.

There will be experiments then, funded by the federal government, within the next two to three years in letting the institution decide who can do what, and the possibility, at least, of a fairly wide spread use of institutional licensure by 1980. This may come much faster than some people think, if present attempts at reform of accreditation, certification, equivalency and the like don't get on the ball.

A number of recent developments illustrate this. A time bomb hidden in the depths of Public Law 92-603, the social security amendments, is Section 1123, which says that by 1977 the Secretary shall develop standards for determining the qualifications of many categories of health care personnel, and he shall not deny payment under Medicare or Medicaid (welfare) for service performed by a person meeting those standards "solely because of his failure to meet formal educational or professional membership requirements."

If these things happen, education will have to become far more relevant to the immediacy of the job, because people in industry may only require certain courses. You won't have to pursue a lockstep curriculum to obtain a guild card, more attention will have to be paid to individualized instruction, and certainly the employer will have much more to say about the curriculum than he does now.

He is getting more, the rise of professionalism in inservice education in the industry has been phenomenal. A whole new society for this purpose has come into being in the last two years under the sponsorship of the American Hospital Association, and the industry is only beginning to explore what can be done with inhouse education keyed to the job to be done.

So relevancy of education outside the industry to the needs of the job looms ever larger.

We have the hardware to do this of course, teaching machines, methodologies, if we begin to use it. Educators, certainly, in this kind of situation, will become far more counselors and educational experience managers, and students will teach themselves. Students teach themselves in any event, reform or no, but this will make it absolutely clear.

While all this is a little speculative, it's a strong possibility. At least we know there's going to be experiment, whether it works or not, in the next couple of years.

Two summary observations:

1) It may seem to us that change is coming all too fast, but we are likely to live with a pluralistic health care system for at least the next ten years, and probably beyond. Educators then, must be prepared to deal with preparing people to work in different settings with differing health care philosophies. After all, someone is going to have to be the medical assistant to the last practitioner of fee-for-service, solo-practice medicine.

The factors I have outlined in graph change, technical change and delivery change are all going to influence education in the coming decade. How this affects you is going to depend a great deal on where you are and who you're working with. So local planning, working with planning organizations and industry, cooperation, coordination, becomes increasingly necessary.

Here I will insert the commercial. My own organization, composed of the federally-mandated planning agencies, is something less than sophisticated about manpower planning. It's the reason I direct a program for improving health manpower planning as a process. Don't wait, therefore, for the local planning agency to come to you. You are needed in many cases to get them started

2) The possibility of the fourth kind of change, change of our basis of quality control, is more problematical, but it will certainly apply in some measure even if its not carried to its logical extension in the near future.

The important thing about the philosophy underlying the last two forms of change (health care delivery change and quality control change), is their emphasis on the team approach. The health care delivery system visibly becomes a system; quality control change pre-supposes that the group delivering the care agree on what their product goal is. The emphasis will be on collegiality in practice, and, important to you, collegiality in education, for the health team.

More and more we are going to see as a necessity of the delivery system actually becoming a system -- rather than a succession of episodes where each professional does his thing on his sancrosanct portion of the patient "turf" -- the concomitant

necessity for the team to have common educational experiences, in each institution and in consortia of institutions which I will call by the generic "health educator, health provider co-operatives" and you can call by whatever name or acronym is popular this week in your locale.

This kind of relationship, of course, is less threatening to vocational educators than to many others, since much of the history of vocational education is based upon relating to the needs of the employer. At least that's in the prayerbook.

Recently I heard a man speak on the health team, and state that while the physician has traditionally been the captain, who is captain at any given time today ought to depend upon what's wrong and the given stage in therapy. Now, some people may think "that's not very revolutionary!" Well, it isn't, unless you know who the radical speaker was -- and he happens to be the President Elect of the American Medical Association.

The closed world of scientific and educational structure which has locked health care delivery and education for the health fields into compartments since the Flexner Report of 1910 is at last opening up. We are recognizing, hopefully not too late, that health care is a social as well as a scientific process. However, to change our ways in health care delivery, preparation to work in delivery has to change as well!

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4/ See "The Credentials Monopoly", Report on Higher Education, Office of the Secretary DHEW, March 1971. A second "report", which speaks even more bluntly was released in November 1973.